

## OUR VISION FOR PAYA LEBAR POLIS (PLP)

The main theme behind our proposed redevelopment of Paya Lebar Airbase (“**PLAB**”) will focus on preserving the past and integrating it with our team’s perception of Singapore’s future. We envision a space where Singaporeans can work, live and relax, all within the hub that will be the redesigned PLAB. Our plan hopes to integrate the historical significance of the past while addressing Singapore's existing urban challenges in the 21st century. These challenges are represented by the three sub-themes that our plan will incorporate - mainly mobility, sustainability and innovation. We have prepared a graphical representation of our themes in *Appendix A*.

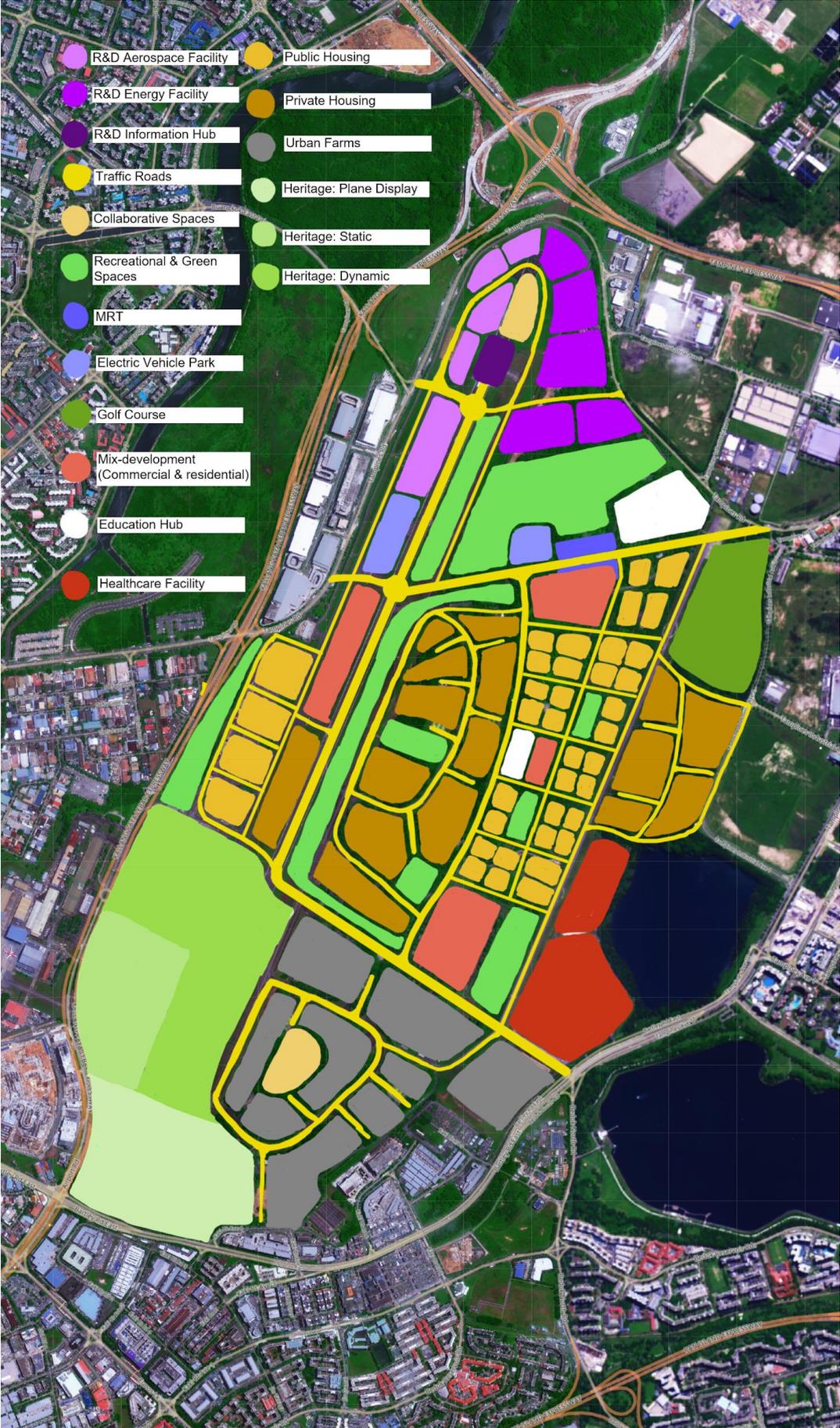
**Historical significance:** We believe that PLAB retains significant emotional value (especially towards the older Singaporeans) and the preservation of some portions of the site presents a chance for us to conserve the built heritage. As highlighted by the Urban Redevelopment Authority (“URA”), our built heritage tells of our nation’s history and progress and thereby giving us a sense of national identity. We believe that PLAB has come to signify the rise of Singapore’s independence and our first steps towards establishing Singapore on the world map. While recognising that it may be impractical to preserve the entire block of land, we propose to keep a portion of the development as a time capsule and integrate the rest of the plot.

**Urban mobility:** The redevelopment of PLAB opens up direct pathways that connect our heartlands (Hougang, Kovan) with the newer developments in the East (Tampines, Changi Airport). It also opens up alternative routes to free up congestion in nearby expressways that are heavily utilized (PIE, KPE, TPE), especially during the peak hours. We aim to integrate the existing park connector network to encourage citizens to walk, cycle and ride, creating a safer route for riders to commute from our existing cycling towns of Pasir Ris and Tampines with the existing industrial estates in Kaki Bukit, Tampines logistics hub and Defu. In terms of social mobility, we envision open spaces where people from different social classes will interact. Highlighting our open space concept from our historical segment (elaborated below), we seek to attract Singaporeans from all walks of life to enjoy the programmes that will be held at these sites.

**Sustainability:** We aim to develop the project with the environment in mind. We want the PLAB block to be carbon-neutral, making sure that we have green strips to break the monotony of the urban concrete jungle. Recognizing that one of the key challenges of Singapore is our self-sustainability of food production, we aim to create a block dedicated towards urban farming to spearhead production of new food sources. In line with preserving our heritage, we aim to preserve the runway as much as possible and plan our design according to the landscape to prevent unnecessary upheaval.

**Innovation:** In line with the aerospace legacy that the PLAB has historically represented, we envision a research hub dedicated towards aerospace and energy as we seek to remain relevant in the global research space. We view that PLAB is strategically located between our two main civilian airports (Seletar and Changi) and expect the location to be ideally located closer to the heartlands where most Singaporeans reside. We also seek to create a green energy hub, dedicated to the research towards alternative forms of energy. We hope that this space in the East provides firms with an alternative office space since most energy-related companies are located in the West of Singapore.

**PROPOSED LAYOUT OF THE SPACE: PAYA LEBAR POLIS (PLP)**



## **URBAN MOBILITY (MAIN TRANSPORTATION PATHWAYS ARE IN YELLOW)**

Inspired by Baron Haussmann's renovation of Paris, we aim to introduce open avenues. Haussmann's avenues and boulevards helped to prevent routes from becoming funnelled through the congested city centre and gave Paris space to breathe. As we seek to preserve the existing airstrip, the design can be easily adopted. We will first connect the road leading from Tampines Link at the east with Tampines Road near the Tampines industrial park on the west. Also, we aim to introduce a main artery leading into PLAB at the intersection between Bartley Road East and Bedok North Road leading northwards up towards a segment of the existing PLAB runway. We will then aim to convert the runway into a 6-lane two-way road leading up to a roundabout without traffic lights. Past the roundabout, the road will follow the existing runway and extend onward to TPE and/or KPE.

The plan focuses on enhancing mobility between the East and the West portion of PLAB. Due to the runway, existing roads have to circumvent the entire plot, either using the navigating across from the north via Tampines Road or from the South via Bartley Road East. Such a design can relieve the traffic pile-up seen often on key highways (PIE and KPE) during the peak hour. This access can shorten public transportation time significantly. The lack of traffic lights can also encourage higher road speeds and facilitates a shorter commute.

The roundabout seeks to improve the flawed cross junction traffic design. Roundabouts bring many benefits including greater safety, more efficient traffic flow and less traffic conflict. Roundabouts are designed to lower car speeds and eliminate left turns. It also brings the number of conflict points down from 32 in a signalled cross junction to just 8.

By observing the 2040 Land Transport Master Plan, we have identified Tampines North as a potential MRT station that could be introduced to serve this block of commuters. Therefore, we have strategically positioned it below the newly constructed road to ensure that the MRT can service both the needs of the residents and those who are working. As an added benefit, public buses can use these intersections to shorten the commute between the towns (Hougang and Tampines for example), potentially reducing the commute from more than an hour to less than 30 minutes.

Within the PLAB block, we aim to have shuttle services that operate in this space exclusively. The shuttle bus services will be serviced by fully electric vehicles. It may even be run by autonomous vehicles if technology allows for it. There will also be park connectors that will connect the spaces to encourage a culture of walk, cycle and ride.

With its strategic position nearest to the TPE, better connectivity to both Changi and Seletar is ensured for our aerospace-oriented R&D spaces. The R&D buildings are situated along the fringes of PLP. Electric autonomous vehicles will also be used as an energy-efficient alternative for transport within PLP, catering to both residents and workers. PLP will also serve as a safe testing space for the trial testing of such vehicles, with the aid of small connecting networks intertwined within PLP. The interconnecting paths will facilitate better AV shuttle connectivity throughout the bloc.

## HERITAGE



An important aspect of PLP is in preserving the rich PLAB heritage. Primarily, focus and importance will be placed on public education, with regards to the uses and history of PLAB. With Singapore's progression towards modernity, we hope to encapsulate the past and present through the preservation spaces. Given PLAB's recognisable structures such as the runway and control tower, such structures can be gentrified into landmarks to create another iconic structure in Singapore to unify the public, through this re-imagined space.

The 2 main features allocated for heritage preservation are the static and interactive aspect. For the static aspect, demarcated by the middle green portion in the map above, the Control Tower will be fully preserved to house a permanent exhibition showcasing and explaining the PLAB history. The exhibition will ideally display the historical timeline, the significance of PLAB in Singapore's history to Singaporeans, and hold information regarding the newly redeveloped space, PLP.

For the interactive aspect, it will be implemented in the preserved runway area, as shown in the darkest and lightest green portions. Cultural and historical events can be hosted and displayed along the runway. It can also be transformed, with the help of digital innovation, into a miniature interactive PLAB past, for Singaporeans to experience. This part of the runway can also be a public space for Singaporeans to interact with history and with each other. Given that public space should encompass the following characteristics: accessibility, meaning and entailing memories, we took inspiration from the Chinatown Heritage Centre. The heritage centre is strategically placed near the MRT, making it easily accessible, further elaborated in *Appendix C*.

The centre also holds many themed exhibitions, the nature of which PLP intends to mirror. For example, exhibitions such as '1950s Chinatown', and the 'transformation of Chinatown' allow the public to learn and experience Chinatown's history, and provide opportunities for multi-generational interaction as well, as shown in *Appendix C* – the heritage site featured in PLP serves a purpose in enriching the redeveloped area, and provides a user-friendly public space in the heart of Singapore. The site draws inspiration from current public event spaces such as Bayfront Event Space, also found in *Appendix C*.

## INNOVATION (ENERGY & AEROSPACE)



PLP will also house an energy and aerospace R&D cluster. In line with Singapore's vision and future, we have incorporated both energy and aerospace innovation together. Energy alternatives such as green technology, solar power, semiconductors and renewable energy innovation will be trialed at PLP, given the spatial facilities and amenities. Such innovations can also be used in sustaining the neighbouring residential and manufacturing areas. It is hoped that the R&D cluster at PLP will be the pioneering innovation hub for energy and aerospace for Singapore and the region.

At PLP, the spatial land and strategic location allow for the concentration and consolidation of aerospace innovation away from busier areas (eg. Changi). With its central location being between Seletar and Changi, it provides a strategic location as an innovation and project collaboration area. The proximity to Temasek Polytechnic will also allow aerospace students to participate in work-study programmes, internships etc, with the R&D corporations situated at PLP. Proximity to ST Aerospace, a leading aerospace engineering corporation also encourages collaboration and efficiency, where PLP can host trials and experiments. It is hoped that foreign talent professionals 'the creative class' will be encouraged to use this space as an innovation platform for the South East Asian region. The R&D buildings will consist of 5-10 low to mid-rise buildings.

### **Key Features**

**Central Information Hub (dark purple):** located at the end of the runway, a central information hub will be opened to the public, serving as the gateway to the R&D cluster. A showcase of different successful and ongoing R&D projects in both aerospace and energy innovation will be exhibited, along with past and present achievements.

**Project Collaboration Space (yellow space above the information hub):** located beside the information hub, the project collaboration space will serve as a side testing space for R&D trial projects, with amenities catered for collaboration. It will also host recreational amenities for employees.

**Convention Centre (light purple):** showcase of existing aerospace innovations and demonstration spaces on both new and old planes. In conjunction with both aerospace and energy innovation, the convention centre seeks to display the best of Singapore's R&D in this field. It will also be used to host aerospace and energy conventions, such as the Singapore Air Show and Asia Clean Energy Summit, among others.

**Adjacent satellite campuses (green):** adjacent to the R&D cluster, the satellite campuses will be home to various educational institute extensions, such as Temasek Polytechnic, and the Singapore University of Design and Technology. The purpose of the satellite campuses would be to facilitate, encourage and educate young minds in both the field of energy and aerospace innovation, as aligned to the R&D hub's purpose. In doing so, students across various technology, energy and aerospace fields can participate directly in the R&D hub's ongoing projects, working with real professionals and gaining firsthand experience.

## INDUSTRIAL



With land scarcity being one of Singapore's constraints, the country is heavily dependent on food imports (which account for 90% of food consumption). As a result, external shocks can impact this crucial supply chain. Singapore currently relies on over 180 countries in its food network, to ensure food supply continuity. Currently, only 200 local farms are contributing to national food security. However, supply disruption risks are likely to increase with climate change. Singapore's '30 by 30' goal aims to produce 30% of its nutritional needs through local production by 2030, to mitigate food security challenges. Therefore, it is important to plan and allocate spatial facilities in supporting urban-friendly and eco-friendly farms. Such initiatives will be supported and funded by the Agriculture Productivity Fund, in terms of R&D collaboration. Despite its diversified approach in food supply chains, Singapore must increase self-sufficiency via urban farming.

As such, PLP offers innovative solutions in catering to this need. The surrounding land-uses (highlighted in grey) are occupied by light auto-focused industries (an extension of the Kaki Bukit industrial estate). Due to its flat layout, urban farming is preferred as compared to natural farming, due to its indoor nature allowing for vertical farming and the full utilisation of space. Singapore's leadership in hydroponic and aeroponic technologies. These two methods do not require natural farming methods, saving on water and land, which are Singapore's two most scarce resources. Hence, the urban farms located at PLP will be more focused on vegetables and fruits, contributing to the sustainability of the global supply chain. The yellow space situated in the middle of the industrial plot serves as an open space for urban farmers to unwind and relax.

## RESIDENTIAL & COMMERCIAL



With the aim of PLP being a futuristic hub, residential properties will be built to house foreign talent, professionals and expatriates that are working in the research hub and educational facilities. The science and technology located at Buona Vista serve as a major inspiration for this new hub at Paya Lebar. Buona Vista houses Biopolis, Fusionopolis, learning institutes and mixed-use developments that serve the needs of the people living and working in this neighbourhood. In the same way, PLP will be projected as a self-

sufficient neighbourhood with a high-quality of life. PLP will be dedicated to enhancing the residents' quality of life in three different areas.

Public housing will be situated on the right half, and private housing situated on the left indicated in brown, along with an integrated commercial mall indicated by small orange squares. Given the significant land area, HDB will be able to utilise it for building BTOs, which are in high demand (Liu, 2019). With policy changes allowing more Singaporeans affordable housing, it has resulted in increased demand for public flats (Ministry of National Development, 2019). Therefore, it is imperative that affordable housing is maintained, and adequate housing supply ensured. Furthermore, educational institutes and green recreational spaces will be allocated for residents.

We propose several mixed-use developments (indicated in coral) around PLP to become a modern lifestyle destination, offering an invigorating mix of dining, retail and leisure opportunities for residents. We drew inspiration from Rochester Mall and Great World City that are located in popular neighbourhood areas among expatriates. In terms of building height for the residential housing, it will be low to mid-rise to encourage city breathability and quality air exchange. Furthermore, we have allocated space for a new community hospital and elderly care facility that is located next to Bedok Reservoir. This will create a peaceful and healing environment to recover and rejuvenate. We took inspiration from Khoo Teck Puat Hospital, which is situated next to Yishun Pond and has been recognised for creating a clean and serene environment for their patients.

**RECREATIONAL**



Recreational facilities (as illustrated above in the green spaces), will be built to support residents' and promote a 'work-life' balance for both workers and residents. By providing recreational amenities, we can support the PLP population in all aspects positively and cater to all their needs.

**Key Features**

**Green Belt:** as illustrated in light green, there will be functional parks built, aligned to Singapore's vision of a Garden City. Other amenities include outdoor sports facilities, lakes and greenery that surround the residential areas, forming a Green Belt in providing quality life and connectivity within PLP.

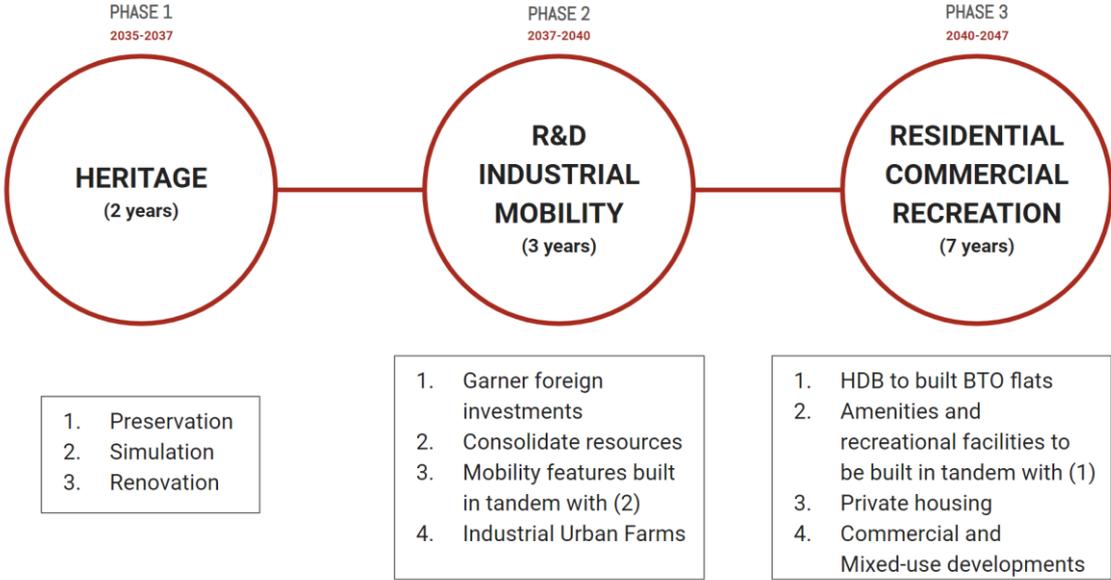
**Park Connector Network (PCN) and Cycling Path Network (CPN):** the cycling paths and park connectors within the PLP bloc will be able to better facilitate connectivity and serve the needs of both commuters, motorists and pedestrians. Its connectivity which serves both the MRT and external roads will help facilitate better connectivity.

**Golf Course:** as illustrated in the dark green portion, a golf course will be built, as a professional hub serving the high-end recreational needs of residents and foreign talent. With the existing lush greenery, it also provides privacy and exclusivity as a private golf course resort.

**Community Clubs:** the clubs will be spread out throughout the residential complexes, to foster community interaction. Organisations such as the Peoples’ Association (PA) will also be involved, to conduct workshops, external activities, classes and sports events together. Each community club will have integrated facilities, functioning as space for residents to relax and unwind.

**R&D open space:** the area will be kept as an open field, where large-scale activities can occur such as night markets, outdoor night concerts, and act as a picnic/sports space for residents. With flexible usage, we aim to create harmony and common ground for different groups within PLP.

**TIMELINE**



The development of PLP will be carried out in 3 phases (2035 to 2047), with the aim of preservation and futuristic innovation. The first phase entails the preservation of key PLAB heritage features, followed by mobility connection, the R&D cluster, and industrial construction. The final phase of development focuses on residential/commercial, educational and recreational facilities

**PHASE 1 - Preserving our Heritage**

The first phase of redevelopment focuses on the preservation of PLAB’s heritage. As it requires the conservation of current landmarks (the Control Tower and Runway), a ‘Change-of-use’ application will be submitted to the Urban Redevelopment Authority. A request for ‘Specific Facade Restoration Guidelines’ will also be submitted to facilitate development applications for restoration works for the landmarks. This process will take approximately 10 days to 1 month.

After these permissions have been acquired, it would be beneficial to create a simulation of the new heritage centre and runway for public feedback. This allows for efficient area usage that entices and appeals to end-users (Singaporeans) and built with them in mind. The process of public feedback and simulation will take approximately 3 to 5 months. After the design, functions and purposes have been finalised, actual renovations will begin. The first stage of heritage preservation would be to allocate the respective areas to different land uses, without disrupting the originality of the preserved sites. Ensuring that the renovations and construction would not be disruptive or inconvenient to residents in nearby neighbourhoods is also of utmost priority. The complete gentrification and renovation of the control tower and the runway could take an approximate one to two years.

## **PHASE 2 - R&D cluster, Industrial and Mobility**

The second phase of development will be focused on the R&D and industrial sector. Due to its attractiveness as a pioneering energy and aerospace research facility, time is needed to garner foreign investment. To allow for this, the R&D and industrial blocs are built in the second phase of planning, after the conservation aspects of PLAB have been accounted for.

In doing so, there is enough time to consolidate resources and establish joint partnerships in the two innovation sectors as previously mentioned. Mobility will also be constructed at the same time, to facilitate connectivity within the entire bloc. Given the current plan for the MRT construction, the trial and debut of the AV shuttle service will be aligned to the MRT launch. At the same time, industrial urban farms will also be completed. As the heritage portion is already accounted for, urban farms have more leeway in expanding and designing their farms, contributing to Singapore's food supply. This also allows the PLAB bloc to be self-sufficient in terms of food production and other resources. The construction will take 3 years, where the R&D cluster will be constructed first, along with the vertical urban farms, followed by mobility. Mobility is implemented and constructed in this phase to facilitate better connectivity and mobility throughout PLP once the residential blocks are completed. Furthermore, it will also provide clear pathways for workers working in both the industrial and R&D sector

## **PHASE 3 - Residential, Commercial and Recreational Development**

The third redevelopment phase focuses on the sustainability of the living environment in PLP. After the completion of the R&D and industrial sector, it will generate many job opportunities for locals and foreign talent. With the development of residential, commercial and recreational development, it will serve as an attractive investment for real-estate builders and encourage investment. HDB will be able to build their BTO flats in catering to their demands. They will also be able to sell private housing to private building corporations for development. Public housing and recreational facilities will begin construction first, followed by private housing, mixed development and commercial zones.

Due to the extended duration required for public housing (to cater to BTO flats), the recreational portion will also be constructed during this period to save time. After the tarmacked road is constructed in Phase 2, the key features for the recreational portion will begin alongside public housing. Trees can be transferred from other places within PLP (which has been relocated together before), and even commission urban farms nearby to plant some then wait until the right time for transplant. The golf course will be constructed after a bid for interested investors or private contractors. During this period, the other community clubs (in conjunction with PA) will be formed, providing community committees for residents and holding local initiatives such as group activities, Community in Bloom workshops. This period would take approximately 4 -5 years.

Private, commercial and mixed development construction will come after the public housing and recreational portions have been established. This will take approximately 2 years; since contractors can begin after being awarded the bid by the URA. In doing so, it is hoped that the surrounding environment of recreational amenities, futuristic R&D and industrial farming will prove attractive to contractors, highlighting that PLP is a self-sufficient space for the future.

## REFERENCES

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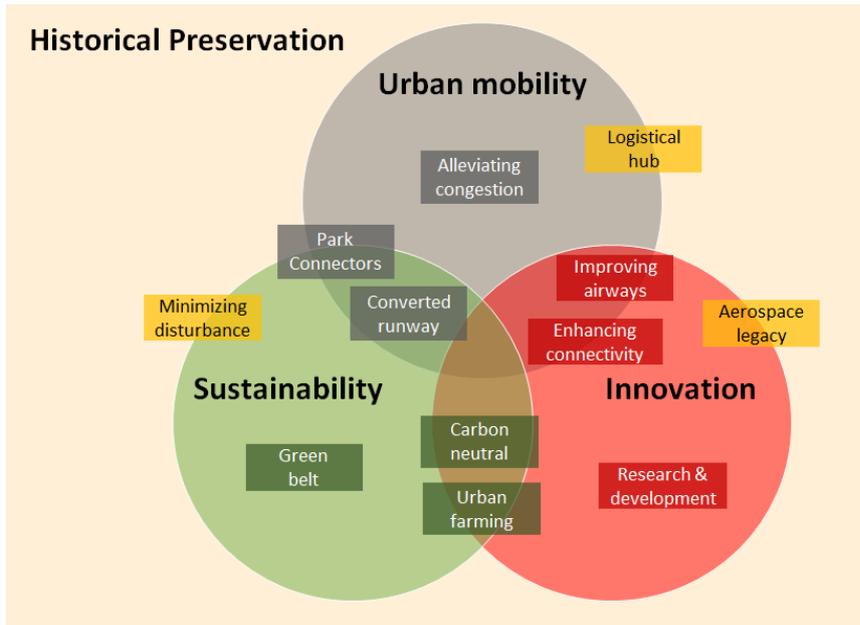
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**APPENDIX A: VISION AND RATIONAL SNAPSHOT**



**APPENDIX B: CUTTING DOWN THE TRAVEL TIMING THROUGH OPENING UP PLAB**

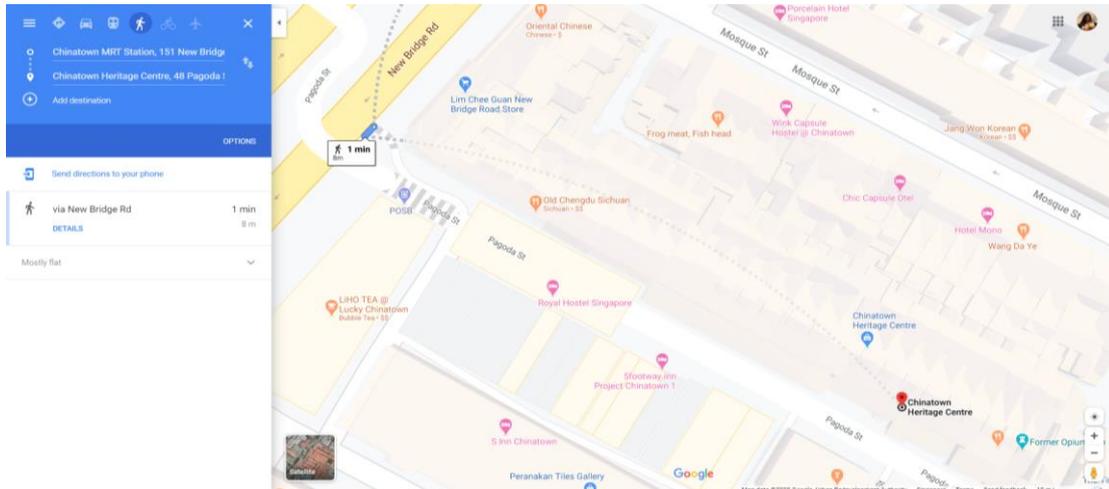
58 bus Route Map



As seen in the 58 bus route from Pasir Ris to Bishan, the route navigates the south-side of PLAB. The route from Tampines. As a reference, the estimated bus ride takes around 1 hour for a commuter to travel from Bef. Tampines Ave 9 to Serangoon MRT station. There presents an opportunity to create a bus route that will cut through the PLAB block that can drastically reduce the time taken for commuters to travel between these two heartlands.

## APPENDIX C: HERITAGE REFERENCES

### LOCATION MAP OF CHINATOWN HERITAGE CENTER VIS-À-VIS CHINATOWN MRT STATION



### CHINATOWN PROGRAMMING AND INTERACTIONS (1/2) ADAPTED FROM

<http://www.chinatownheritagecentre.com.sg/>.

**Experience 1950s Chinatown**

The Chinatown Heritage Centre is the gateway for all visitors to trace the footsteps of Singapore's early pioneers and discover the personal stories of people who made Chinatown their home.

Located within three beautifully-restored shophouses on Pagoda Street, the Chinatown Heritage Centre is the only place in Singapore that has recreated the original interiors of its shophouse tenants in the 1950s, offering a rare glimpse into the lives of Chinatown's early residents.

### CHINATOWN PROGRAMMING AND INTERACTIONS (2/2)

**EVERY STEP A STORY**

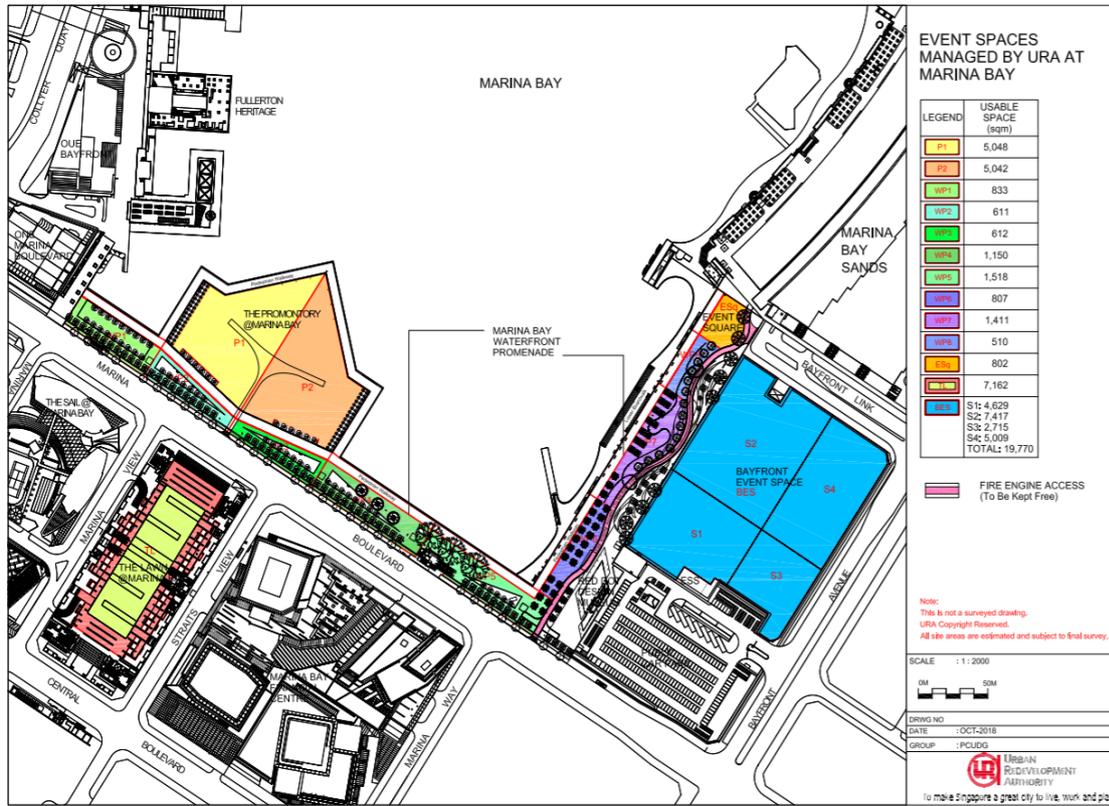
**Experience the Dynamic Transformation of Chinatown**

Every building, every street, every lane in Chinatown has stories to share. Behind this modern façade today, there are layers and layers of memories, each telling a different aspect of the area's history. These memories and tales of those who once lived here form a rich landscape of heritage. They continue to define Chinatown, even as buildings change and streets evolve.

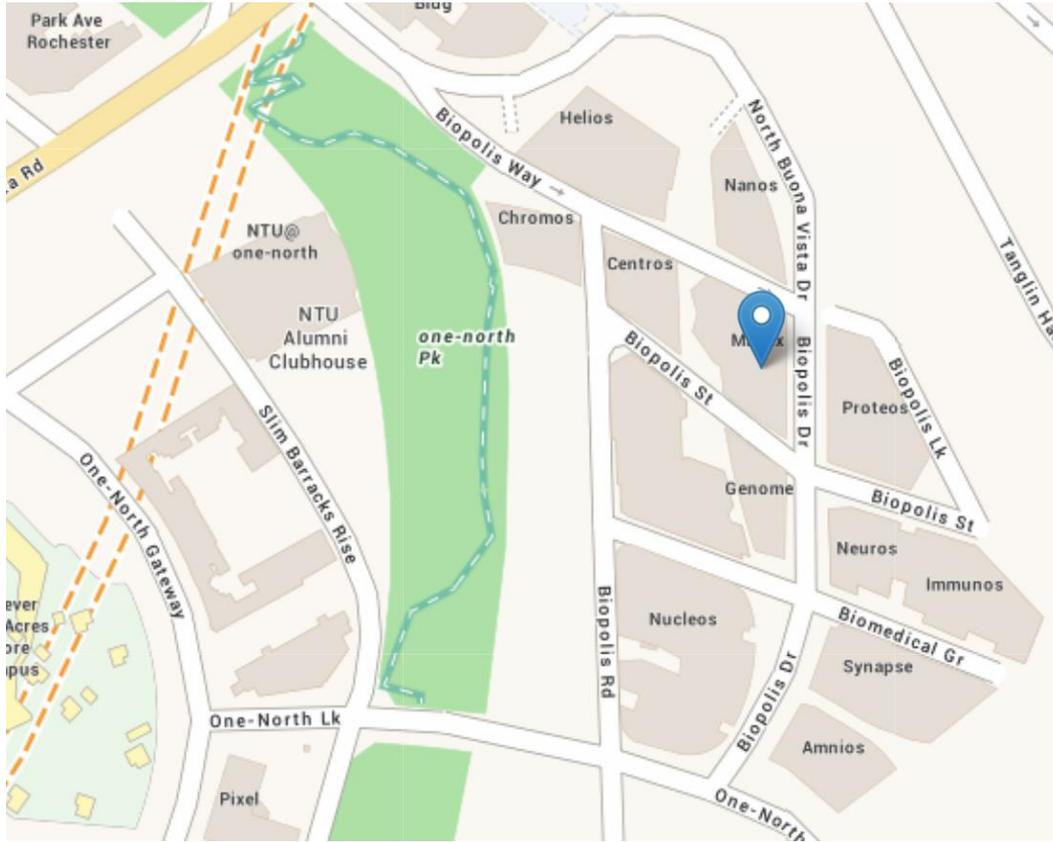
[Click Here](#)

**MARINA BAY EVENT SPACES ADAPTED FROM**

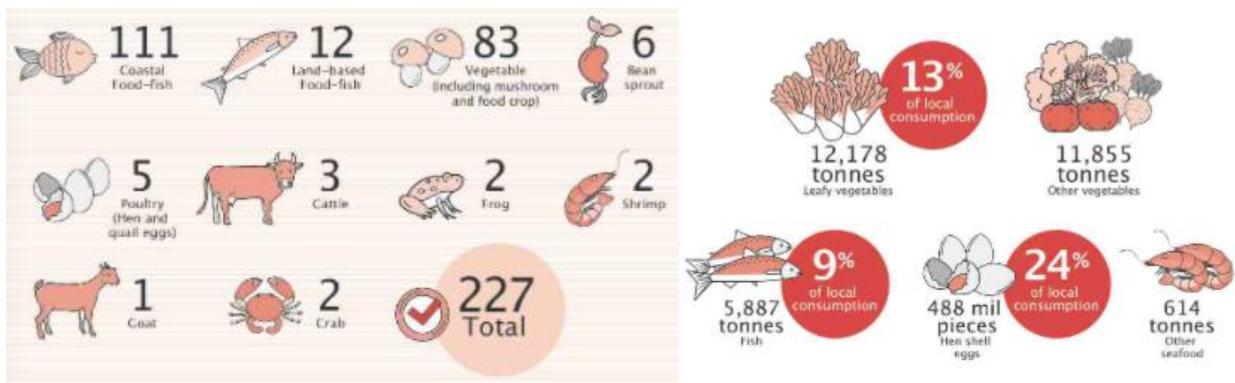
<https://www.ura.gov.sg/Corporate/Get-Involved/Shape-A-Distinctive-City/Explore-Our-City/Marina-Bay/Event-Application>



**APPENDIX D: Connectivity inspiration from Biopolis (mirroring that of the R&D cluster)**



**APPENDIX E: Local Farm Production of key food items. From URA Annual Report 2018-19**



**APPENDIX F: UNMODIFIED MAP USED AS REFERENCE**

